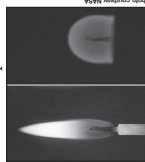


The Space Laboratory

Everything changes

Everything we know — all biological, chemical and physical processes — developed in the gravity on Earth. When we take away Earth's gravity, things act differently. For example, crystals grow larger, flames are rounder, and plant roots not only grow down, but out toward food.

The ISS allows us to study how things change in microgravity. This helps us learn why things act the way they do on Earth. In microgravity, things don't always act the way scientists expect.



On Earth, flames form a teardrop shape (left). In microgravity, flames grow into a rounder shape.

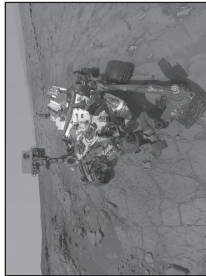


Astronaut Karen Nyberg works with a microgravity experiment on the ISS.

Success story

A disease called Duchenne muscular dystrophy (DIS-tro-fee) affects about 1 in 3,600 boys. It causes muscles to waste away.

In microgravity, crystals grow bigger and more regularly shaped. This lets researchers get a better look at protein crystals involved in this disease. They have identified a substance in the protein that they couldn't find on Earth. This is helping scientists develop better treatments.



The Mars rover Curiosity took this picture of itself while exploring Mars.

The effects of outer space

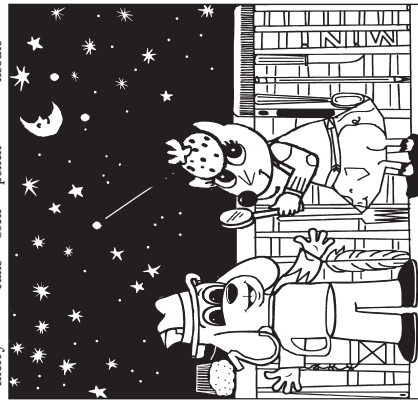
Space radiation, temperature differences and other conditions in outer space can destroy materials. Experiments mounted on the outside of the ISS are helping scientists figure out which materials last longest in space.

One of the samples from ISS experiments survived so well that it was used to create a coating for Curiosity, the rover now exploring Mars.

Mini Spy ...

Mini Spy and Basset Brown are watching the International Space Station cross the night sky. See if you can find:

- ladder
- comb
- strawberry
- cupcake
- feather
- cherry
- pig
- kite
- tooth
- fork
- cane
- sock
- pencil
- needle
- exclamation mark
- word MINI
- number 2
- spoon
- arrow



Rookie Cookie's Recipe

Turkey and Cheese Noodle Casserole

You'll need:

- 1 (12-ounce) package egg noodles
- 1 (8-ounce) carton reduced-fat cream cheese
- 1 (8-ounce) jar spaghetti sauce
- 1 (24-ounce) jar spaghetti sauce
- 1 cup onion, chopped
- 1 cup green pepper, chopped
- 2 cups shredded cheddar cheese

What to do:

1. Cook egg noodles according to package directions, drain.
2. Brown ground turkey with onion and green pepper in large skillet, stirring until onion is soft.
3. In a medium bowl, combine cream cheese and sour cream.
4. Pour noodles into a 9-by-13-inch baking dish and mix with one cup spaghetti sauce.
5. Stir remaining sauce with turkey and vegetables. Spread on top of noodles.
6. Let cream cheese mixture melt, spreading evenly over turkey mixture.
7. Top with cheddar cheese.
8. Bake in 350-degree oven for 25 to 30 minutes, until cheese is melted and casserole is bubbling.
9. Allow to sit for 5 minutes before cutting into squares. Serves 8.

You will need an adult's help with this recipe.

Meet Heidi Swedberg



Heidi Swedberg plays the **ukulele** (you-kuh-lay), acts, sings and teaches. Her latest CD is *My Ukulele*. She made the CD with the Sugar Jump Band.

Heidi has acted in several TV shows, including "The Wizards of Waverly Place." She has also acted in several movies, including "Galaxy Quest" and "Kindergarten Cop."

She teaches ukulele classes at elementary schools in Los Angeles. She taught the ukulele to kids at an orphanage in Haiti. She has worked with Outside, a group that brings music to places such as senior centers and care homes for the elderly.

Heidi was born in Hawaii and grew up in Albuquerque, N.M. She began playing the ukulele when she was 5. She majored in theater in college. After college, she trained at a theater in Kentucky and then moved to New York City to act in films.

Ready Resources

The Mini Page provides ideas for websites, books or other resources that will help you learn more about this week's topics.

On the Web:

- nasa.gov/iss-science
- 1.usa.gov/1dGfpgE
- spacestationlive.jsc.nasa.gov

At the library:

- "The Amazing International Space Station" by the editors of YPSI Magazine
- "Space Station Science" by Marianne J. Dyson

Space Station FIND

Words that remind us of the International Space Station are hidden in the block below. Some words are hidden backward or diagonally. See if you can find:

AIR, BODY, BONES, CELL, CREW, CRYSTAL, EARTH, EXPERIMENT, FALL, FAR, FLUID, FREE, GRAVITY, LABORATORY, MICROGRAVITY, ORBIT, ROBOTIC, SPACE, STATION, STUDENTS, TOOLS, WEIGHT.

WOULD YOU LIKE TO VISIT THE ISS?



Gus Goodsport's Report

Supersport: Max Scherzer

Height: 6-3 **Birth date:** 7-27-86
Weight: 220 **Hometown:** St. Louis, Mo.

Every time Max Scherzer steps on the pitcher's mound, Detroit Tigers fans expect a victory.

Why not? After all, the All-Star right-hander had charged to a big-league best 19-2 record by early September, a major reason the Tigers led their division.

Scherzer, a former college All-American at the University of Missouri, battles hitters with different pitches, including a blazing fastball that can reach 95 mph.

Detroit likes Scherzer for other reasons. He's actively involved in charities such as Dreams Come True and Gloves for Kids, and has taken time to visit children in hospitals and participate in a team caravan tour in the offseason.

He's a good guy — but he's one tough Tiger on the mound.

Mini Jokes

All the following jokes have something in common. Can you guess the common theme or category?

Sam: How do lambs travel as astronauts?

Stam: In spacesheeps!

Sophie: Where do you park at the space station?

Sir: At a parking meteor!

Shelly: How do you organize a fight to the space station?

Simon: You need to plan-et carefully!